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None

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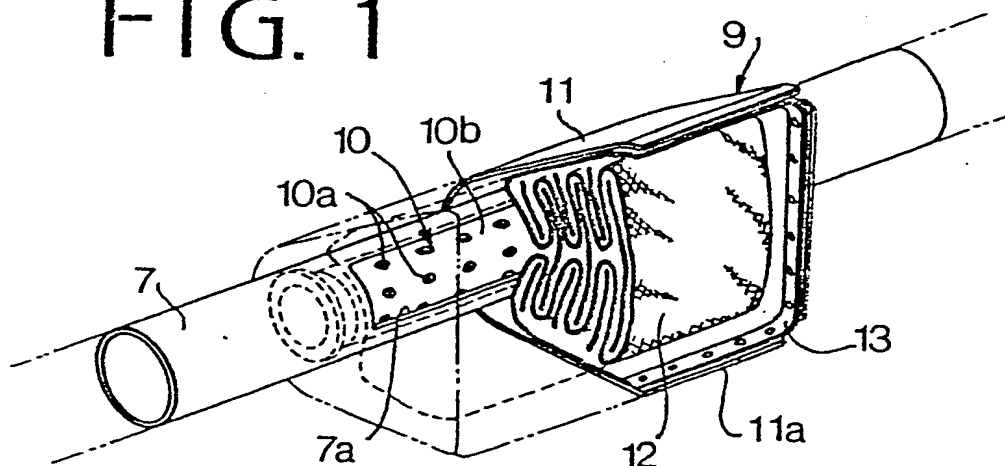
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(54) Mounting vehicle airbag units

(57) An airbag unit 9 for the passenger side of a motor vehicle having a steering support tubular beam 7 laterally disposed in the vehicle has a housing 11 and an inflator 10. The housing 11 is mounted on the steering support beam 7, and the inflator 10 is mounted in the steering support beam. An opening 7a is formed in the beam so as to communicate gas outlets 10a of the inflator with the inside of the housing. In an alternative embodiment, the steering support beam may comprise two portions with the inflator mounted between them.

FIG. 1



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FIG. 1

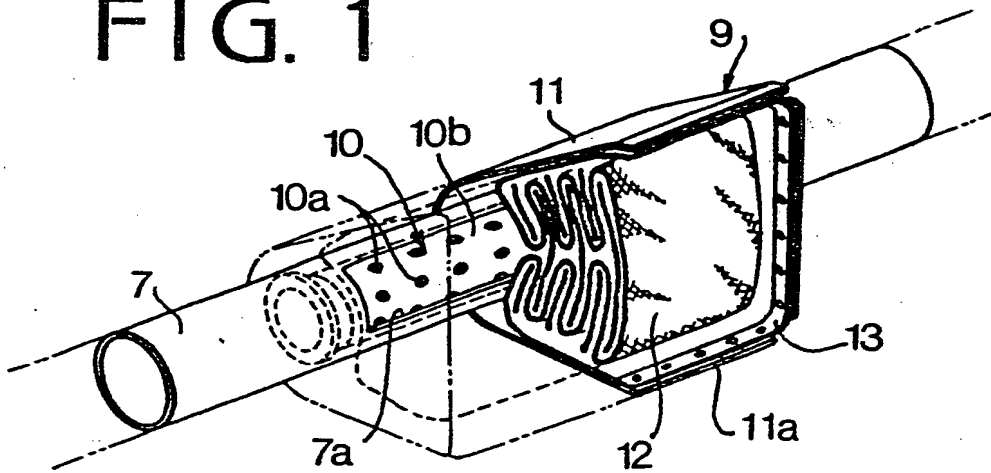


FIG. 2

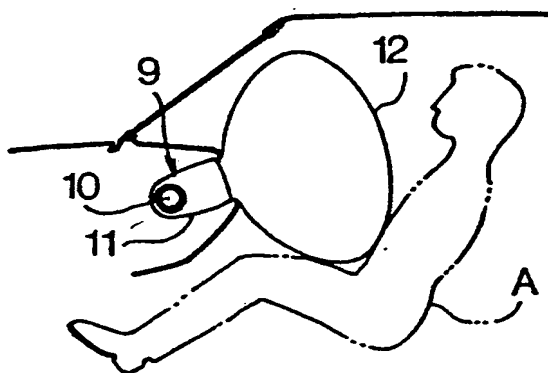
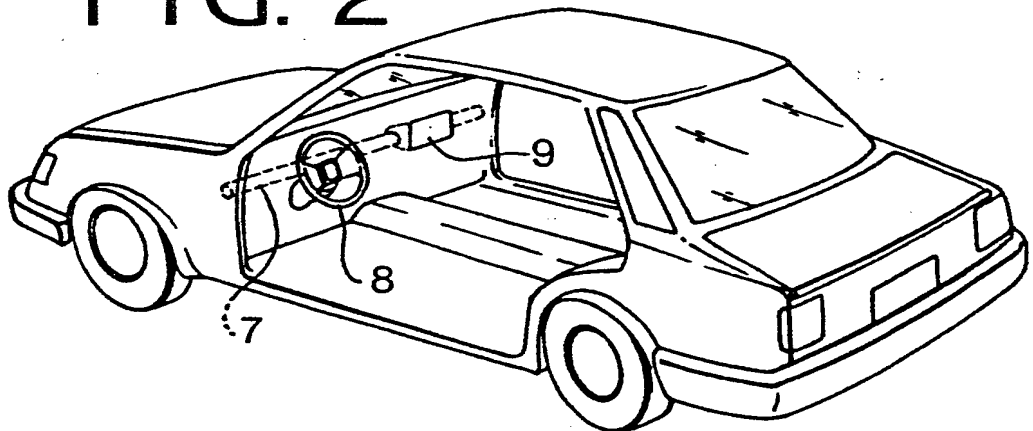


FIG. 3

FIG. 4

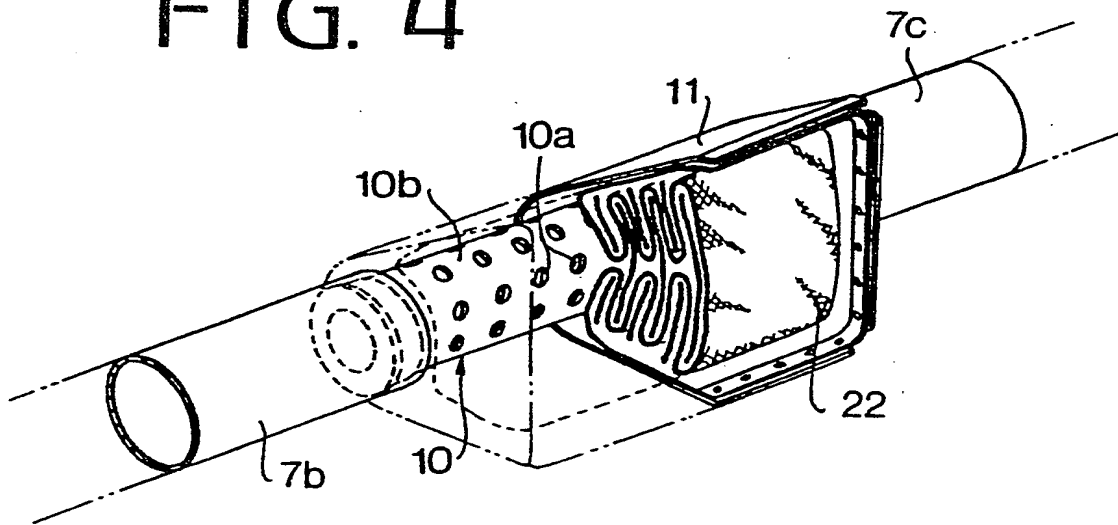


FIG. 5

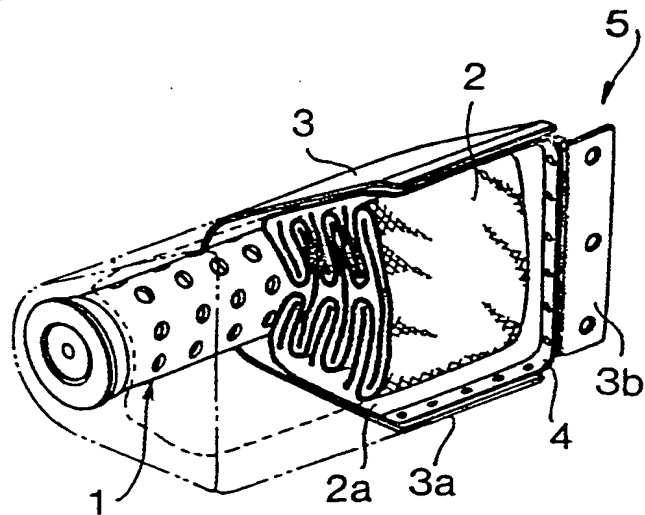
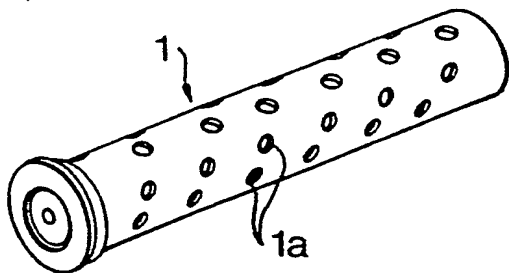
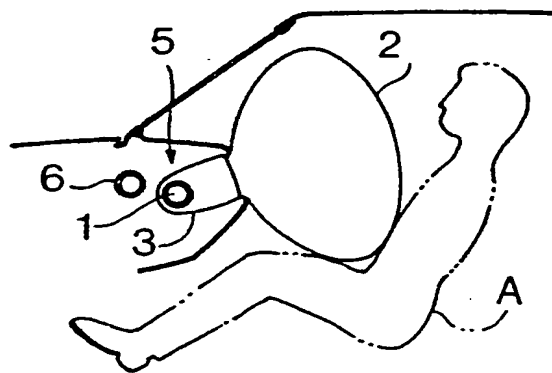


FIG. 6

FIG. 7



AIRBAG UNIT FOR A FRONT PASSENGER
SEAT OF A MOTOR VEHICLE

The present invention relates to an airbag unit for protecting a passenger on a front seat of a motor vehicle.

An airbag for the passenger is provided inside a dashboard of the vehicle to protect the passenger in case of front-end crash.

Japanese Patent Publication No. 60-55330 (U. S. Patent Application S. N. 591910) discloses an airbag system for protecting a passenger on a front seat. The airbag system has a tubular inflator which generates gas to inflate an airbag.

Such an airbag system is hereinafter described with reference to Figures 5 to 7 of the accompanying drawings. An airbag unit 5 comprises a tubular inflator 1, an airbag 2, and an airbag housing 3 for housing the inflator 1 and the airbag 2. The inflator 1 is filled with pulverised chemicals. The inflator 1 has a squib or an electric detonator provided therein for igniting the chemicals to generate gas, and a plurality of gas outlets 1a formed in the peripheral wall for discharging the generated gas into the housing 3. The airbag 2 has an opening periphery 2a to which a mouthpiece 4 is fixed, and the mouthpiece 4 is secured to an opening periphery 3a of the housing

3 by screws. The airbag 2 is folded and inserted in the housing 3. The housing 3 further has brackets 3b on either side of the opening periphery 3a for fixing the housing 3 to the body of the vehicle.

As shown in Figure 7, the airbag unit 5 is laterally provided in a dashboard of the vehicle on an exclusive supporting member provided before a steering support beam 6. When the inflator 1 is actuated as a result of front-end crash of the vehicle, gas generates from the inflator to project the airbag 2 out of the housing 3, inflating it. Thus, a front passenger A is cushioned against the collision.

However, in such a system, a supporting member having a sufficient strength to support the airbag unit must be provided inside the dashboard. Such a supporting member takes up a large space in the dashboard, so that spaces for an air-conditioner duct and harnesses are reduced. In addition, the duct and the harnesses must be so arranged as to avoid the supporting member and airbag unit 5 as well as the steering support beam 6.

An object of the present invention is to provide an airbag unit for a front passenger seat of a vehicle wherein the airbag unit can be securely mounted without taking up too much space.

According to the present invention, there is provided an airbag unit for a front passenger seat of

a motor vehicle, said unit comprising a housing securely mounted on a steering support beam laterally disposed in the vehicle and with an opening of the housing facing said passenger seat; an airbag provided in the housing and arranged to project through said opening when the bag is inflated; and an inflator for inflating the bag, said inflator comprising a tube secured to the steering support beam and having a plurality of outlets through which gas generated in the tube can enter the housing to inflate the bag therein.

In one aspect of the invention the steering support beam is tubular, the inflator tube is within the support beam, and an opening in the wall of the support beam permits gas from the inflator to enter into the housing.

In another aspect of the invention the steering support beam is tubular and comprises two spaced apart portions with the inflator tube interposed between them.

In order that the invention may be more readily understood, it will now be described, by way of example only, with reference to the accompanying drawings, in which:-

Figure 1 is a partially cutaway perspective view of an airbag unit of the present invention;

Figure 2 is a schematic perspective view of a motor vehicle provided with the airbag unit;

Figure 3 is a schematic diagram showing an arrangement of an airbag system in accordance with the present invention;

Figure 4 is a partially cutaway perspective view of an airbag unit of a second embodiment of the present invention;

Figure 5 is a perspective view of a conventional inflator;

Figure 6 is a partially cutaway perspective view of a conventional airbag; and

Figure 7 is a schematic diagram showing a conventional arrangement of an airbag system.

Referring to Figure 2, a steering support tubular beam 7 is laterally mounted in a vehicle between windshield pillars and connected to a steering column through appropriate means as in the case of a conventional vehicle. Thus, the steering support beam 7 prevents the steering wheel 8 from vibrating. An airbag unit 9 is mounted on the steering support beam 7 in front of the front seat.

As shown in Figure 1, the airbag unit 9 has a conventional tubular inflator 10. The inflator comprises a tube 10b having a plurality of gas outlets 10a and filled with pulverised chemicals. The inflator tube 10b is inserted in the steering support beam 7 having an opening 7a for discharging generating gas. An airbag housing 11 is fixedly mounted on the beam 7

with the inflator 10 provided therein. The housing 11 has an opening 11a opened toward the front passenger A and a mouthpiece 13 of an airbag 12 is tightly screwed to the periphery of the opening 11a. The airbag 12 is folded and inserted in the housing 11. The gaps between the housing 11 and the beam 7 are sealed by welding to render the housing 11 airtight.

As shown in Figure 3, when the inflator 10 is actuated at a collision of the vehicle, chemicals therein are ignited by a squib to generate gas. The gas discharged through the outlets 10a enters the housing 11, causing the airbag 12 to inflate and project into the room of the vehicle. As a result, the airbag 12 cushions the front passenger A against a shock at the collision,

Although a large force is exerted on the housing 11 at the collision, rigid steering support beam 7 supports the housing securely. Additionally, since the airbag unit 9 is mounted on the beam 7 which is basically provided in the vehicle, a sufficient space is left inside the dashboard for an air-conditioner duct and electric harnesses.

Figure 4 shows a second embodiment of the present invention where the steering support beam 7 is divided into two portions 7b, 7c. The tubular inflator 11 is interposed between the beams 7b, 7c. Since the inflator 11 is uncovered, the gas quickly

discharges into the housing to rapidly inflate the bag.

While the presently preferred embodiments of the present invention have been shown and described, it is to be understood that these disclosures are for the purpose of illustration and that various changes and modifications may be made without departing from the scope of the invention as set forth in the appended claims.

Claims:

1. An airbag unit for a front passenger seat of a motor vehicle, said unit comprising a housing securely mounted on a steering support beam laterally disposed in the vehicle and with an opening of the housing facing said passenger seat;

an airbag provided in the housing and arranged to project through said opening when the bag is inflated; and

an inflator for inflating the bag, said inflator comprising a tube secured to the steering support beam and having a plurality of outlets through which gas generated in the tube can enter the housing to inflate the bag therein.

2. An airbag unit as claimed in claim 1, in which the steering support beam is tubular, said inflator tube is within the support beam, and an opening in the wall of the support beam permits gas from the inflator to enter into the housing.

3. An airbag unit as claimed in claim 1, in which the steering support beam is tubular and comprises two spaced apart portions with the inflator tube interposed between them.

4. An airbag unit for a front passenger seat of a motor vehicle substantially as hereinbefore described with reference to the accompanying drawings.

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